Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1.-25. Canceled.

26. (Currently Amended) An article comprising:

a fiber waveguide comprising alternating layers of different materials surrounding a core extending along a waveguide axis, wherein the alternating layers define a spiral structure in a cross-sectional plane perpendicular to the waveguide axis.

27. (Original) The article of claim 28, wherein the spiral structure comprises a multilayer structure comprising at least two layers of the different materials encircling the core multiple times.

28. (Original) The article of claim 26, wherein the different materials comprise a high-index dielectric material and a low-index dielectric material, and wherein a ratio of the refractive index of the high-index material to that of the low-index material is greater than 1.5.

29. (Original) The article of claim 28, wherein the ratio is greater than 1.8.

30. (Original) The article of claim 26, wherein the different materials comprise a polymer and a chalcogenide glass.

31. (Original) The article of claim 30, wherein the polymer comprises PES and the chalcogenide glass comprises As_2Se_3.

32. (Original) The article of claim 26, wherein the inner most layer of the alternating layers has a thickness smaller than that of subsequent layers of the same material.

33. (Original) The article of claim 26, wherein thicknesses of the alternating layers are selected to guide EM radiation along the waveguide axis at a wavelength of about 10.6 microns.

34. (Original) The article of claim 26, wherein thicknesses of the alternating layers are selected to guide EM radiation along the waveguide axis at a wavelength in the range of about 8-12 microns.

35. (Original) The article of claim 26, wherein thicknesses of the alternating layers are selected to guide EM radiation along the waveguide axis at a wavelength in the range of about 2-5 microns.

36. (Original) The article of claim 26, wherein the core is hollow.

37. (Original) The article of claim 26, wherein the fiber waveguide exhibits transmission losses smaller than about 1 dB/m at a selected wavelength for a straight length of the fiber.

38. (Original) The article of claim 37, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

39. (Original) The article of claim 38, wherein the selected wavelength is about 10.6 microns.

40. (Original) The article of claim 26, wherein the fiber waveguide exhibits transmission losses smaller than about 1.5 dB at a selected wavelength when bent around a 90 degree turn with any bending radius within a range of about 4-10 cm.

41. (Original) The article of claim 40, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

42. (Original) The article of claim 26, wherein the fiber waveguide is capable of guiding EM radiation along the waveguide axis at power densities greater than or equal to about 300 W/cm^2 for a selected wavelength.

43. (Original) The article of claim 42, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

44. (Original) The article of claim 43, wherein the selected wavelength is about 10.6 microns.

45. (Original) The article of claim 42, wherein the fiber waveguide is capable of guiding the EM radiation along the waveguide axis at power densities greater than or equal to about 300 W/cm^2 for the selected wavelength even when the fiber waveguide is smoothly bent around a 90 degree turn with a bent length of at least 0.3 m.

46. (Original) The article of claim 26, wherein the fiber waveguide is capable of guiding the EM radiation along the waveguide axis at powers greater than or equal to about 25 W for a selected wavelength.

47. (Original) The article of claim 46, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

48. (Original) The article of claim 47, wherein the selected wavelength is about 10.6 microns.

49. (Currently Amended) An article comprising a ~~high-power, low-loss~~ fiber waveguide comprising alternating layers of different dielectric materials surrounding a core extending along a waveguide axis, the different dielectric materials comprising a polymer and a glass, wherein the fiber waveguide is capable of guiding the EM radiation along the waveguide axis at power densities greater than or equal to about 300 W/cm^2 at a wavelength of 10.6 microns even when the fiber waveguide is smoothly bent around a 90 degree turn with a bent length of at least 0.3 m.

50. (Currently Amended) The article of claim 49, wherein the alternating layers define a spiral structure in a cross-sectional plane perpendicular to the waveguide axis.

51. (Original) The article of claim 50, wherein the spiral structure comprises a multilayer structure comprising at least two layers of the different materials encircling the core multiple times.

52. (Original) The article of claim 49, wherein the different materials comprise a high-index dielectric material and a low-index dielectric material, and wherein a ratio of the refractive index of the high-index material to that of the low-index material is greater than 1.5.

53. (Original) The article of claim 49, wherein the different materials comprise a high-index dielectric material and a low-index dielectric material, and wherein a ratio of the refractive index of the high-index material to that of the low-index material is greater than 1.8.

54. (Original) The article of claim 49, wherein the glass comprises a chalcogenide glass.

55. (Original) The article of claim 54, wherein the chalcogenide glass comprises As_2Se_3.

56. (Original) The article of claim 54, wherein the polymer comprises PES or PEI.

57. (Original) The article of claim 49, wherein the inner most layer of the alternating layers has a thickness smaller than that of subsequent layers of the same material.

58. (Original) The article of claim 49, wherein thicknesses of the alternating layers are selected to guide EM radiation along the waveguide axis at a wavelength of about 10.6 microns.

59. (Original) The article of claim 49, wherein thicknesses of the alternating layers are selected to guide EM radiation along the waveguide axis at a wavelength in the range of about 8-12 microns.

60. Canceled.

61. (Original) The article of claim 49, wherein the core is hollow.

62. (Original) The article of claim 49, wherein the fiber waveguide exhibits transmission losses smaller than about 1 dB/m at a selected wavelength for a straight length of the fiber waveguide.

63. (Original) The article of claim 62, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

64. (Original) The article of claim 63, wherein the selected wavelength is about 10.6 microns.

65. (Original) The article of claim 49, wherein the fiber waveguide exhibits transmission losses smaller than about 1.5 dB at a selected wavelength when bent around a 90 degree turn with any bending radius within a range of about 4-10 cm.

66. (Original) The article of claim 65, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

67 (Original) The article of claim 49, wherein the fiber waveguide is capable of guiding EM radiation along the waveguide axis at power densities greater than or equal to about 300 W/cm^2 for a selected wavelength.

68. (Original) The article of claim 67, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

69. (Original) The article of claim 68, wherein the selected wavelength is about 10.6 microns.

70. Canceled.

71. (Original) The article of claim 49, wherein the fiber waveguide is capable of guiding the EM radiation along the waveguide axis at powers greater than or equal to about 25 W for a selected wavelength.

72. (Original) The article of claim 71, wherein the selected wavelength is in a range of about 0.75 to about 10.6 microns.

73. (Original) The article of claim 71, wherein the selected wavelength is about 10.6 microns.

74. (New) The article of claim 26, wherein the fiber waveguide is a photonic crystal fiber waveguide.

75. (New) The article of claim 26, wherein the refractive index for at least one of the alternating layers is larger than that for the core.

76. (New) The article of claim 26, wherein the refractive index for each of the alternating layers is larger than that for the core.

77. (New) The article of claim 49, wherein the fiber waveguide is a photonic crystal fiber waveguide.

78. (New) The article of claim 49, wherein the refractive index for at least one of the alternating layers is larger than that for the core.

79. (New) The article of claim 49, wherein the refractive index for each of the alternating layers is larger than that for the core.

80. (New) An article comprising a waveguide comprising alternating layers of different dielectric materials surrounding a core extending along a waveguide axis, the different dielectric materials comprising a polymer and a glass, and wherein the fiber waveguide exhibits transmission losses smaller than about 1.5 dB at a wavelength of 10.6 microns when bent around a 90 degree turn with any bending radius within a range of about 4-10 cm.

81. (New) The article of claim 80, wherein the fiber waveguide is a photonic crystal fiber waveguide.